

**AMENDMENTS TO THE CLAIMS**

1-7. (Canceled)

8. (New) A method for constructing a scalable computer system, the method comprising: interconnecting a plurality of computing nodes to form a plurality of node clusters; providing a plurality of cross-links between the node clusters; directly connecting the plurality of node clusters via the plurality of cross-links such that the system comprises a small-world network; and

wherein the small-world network comprises a substantially higher clustering coefficient of nodes in comparison with a corresponding randomly-connected network in combination with a substantially lower characteristic path length between the nodes in comparison with a corresponding regularly-connected network.

9. (New) The method of claim 8, wherein the cross-links are provided in accordance with a random or pseudo-random process.

10. (New) The method of claim 8, wherein the step of interconnecting the plurality of computing nodes is performed such that the node clusters are fully interconnected.

11. (New) The method of claim 8, wherein the step of directly connecting the plurality of node clusters is performed such that an average path length between the plurality of nodes is less than 2.0.

12. (New) The method of claim 11, wherein the average path length between the plurality of nodes is between 1.5 and 1.7.

13. (New) A scalable computer system constructed in accordance with the method of claim 8.

14. (New) A method for constructing a large scale computer system, the method comprising:

forming clusters of fully interconnected nodes by arranging a plurality of nodes in a network with neighboring sets of nodes, wherein each node of the plurality of nodes includes a plurality of interconnected processors;

providing a plurality of cross-links between selected nodes of different clusters; directly connecting the selected nodes via the plurality of cross-links such that the system comprises a small-world network;

wherein the small-world network comprises a substantially higher clustering coefficient of nodes in comparison with a corresponding randomly-connected network in combination with a substantially lower characteristic path length between the nodes in comparison with a corresponding regularly-connected network; and

wherein each processor of the system can communicate effectively with other processors regardless of their location in the network and without full connectivity in the network.

15. (New) The method of claim 14, wherein the cross-links are provided in accordance with a random or pseudo-random process.

16. (New) The method of claim 14, wherein the step of directly connecting the selected nodes is performed such that an average path length between the plurality of nodes is less than 2.0.

17. (New) The method of claim 15, wherein the average path length between the plurality of nodes is between 1.5 and 1.7.

18. (New) A large scale computer system constructed in accordance with the method of claim 14.